

COMPARATIVE SURVIVAL AND BEHAVIOR OF SPRING CHINOOK SALMON IMPLANTED WITH EITHER PIT TAGS OR ACOUSTIC TRANSMITTERS IN THE SNAKE AND COLUMBIA RIVERS

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ABSTRACT

The current model of the Juvenile Salmon Acoustic Telemetry System (JSATS) transmitter is the smallest acoustic transmitter currently available (12.0 x 3.7 x 5.3 mm, and 0.43 g). In 2008, we conducted a field study to determine whether spring Chinook salmon implanted with a JSATS transmitter could provide unbiased estimates of travel time and survival as they migrated seaward through the Columbia River hydropower system. We released 4,140 acoustic-tagged and 48,433 PIT-tagged river-run spring Chinook salmon into the tailrace of Lower Granite Dam in the Snake River. Fork lengths of acoustic-tagged fish ranged from 95-202 mm (mean = 134 mm). Survival and travel times were estimated using PIT and acoustic tag detections of individual fish at multiple detection sites located between Lower Granite Dam and the Columbia River estuary. There was no significant tag effect on survival from release through the Snake River or to McNary Dam in the Columbia River. Survival estimates of PIT-tagged fish to John Day and Bonneville dams in the Columbia River were not reliable, precluding analysis of tag effects on survival to these locations. Travel times were similar between acoustic-tagged and PIT-tagged fish within the Snake River, and to McNary and Bonneville dams. Travel time was slower for acoustic-tagged than PIT-tagged fish to John Day Dam.